

DRAFT

**ROCKY FLATS ENVIRONMENTAL  
TECHNOLOGY SITE**

**RFCA Standard  
Operating Protocol  
for  
Asphalt and Soil  
Management**

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## Acronyms

AHA	Activity Hazard Analysis
ALF	Action Level Framework
AR	Administrative Record
ARARs	Applicable or Relevant and Appropriate Requirements
BZ	Buffer Zone
CAD/ROD	Corrective Action Decision/Record of Decision
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CID	Cumulative Impacts Document
D&D	decontamination and decommissioning
DOE	United States Department of Energy
DOT	United States Department of Transportation
EDE	effective dose equivalent
ER	Environmental Restoration
ESS	Environmental Systems and Stewardship
HASP	Health and Safety Plan
HRR	Historical Release Report
IA	Industrial Area
IDM	Investigative Derived Material
IHSS	Individual Hazardous Substance Site
IMP	Integrated Monitoring Plan
IWCP	Integrated Work Control Process
K-H	Kaiser-Hill Company
LDR	Land Disposal Restrictions
LLW/LLMW	Low-Level Waste/Low-Level Mixed Waste
NEPA	National Environmental Policy Act
NFA	No Further Action
NPDES	National Pollutant Discharge Elimination System
OU	Operable Unit
PAC	Potential Area of Concern
PCOC	Potential Contaminant of Concern
PM <sub>10</sub>	particulate matter less than ten microns in size
PPE	personal protective equipment
PPRG	Programmatic Preliminary Remediation Goal
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RISS	Remediation, Industrial D&D, and Site Services
RSOP	RFCA Standard Operating Protocol
RWP	Radiation Work Permit
SME	Subject Matter Expert
TSCA	Toxic Substance Control Act
UBC	Under Building Contamination
VOA	Volatile Organic Analysis
WAC	Waste Acceptance Criteria

## EXECUTIVE SUMMARY

As part of the Rocky Flats Environmental Technology Site (RFETS) closure activities, asphalt and soil will be disturbed for various reasons, such as investigational drilling; excess sample material; well and borehole sampling and installation; construction and maintenance activities, including cleaning of ditches and culverts, utility line repairs, power pole replacements, etc. To date the management and disposition of asphalt and soil from these activities has been addressed under various regulatory and procedural requirements that are not consistent or efficient and often result in unnecessary waste generation.

The purpose of this Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) is to streamline in a single decision document, a compliant and environmentally protective routine approach for managing and temporarily placing disturbed asphalt and soil at Rocky Flats prior to final cleanup decisions. In addition to newly generated material, asphalt and soil disturbed prior to the approval of this RSOP may be re-evaluated for management and placement in accordance with this RSOP. This RSOP does not replace accelerated action decision documents required to perform Resource Conservation and Recovery Act (RCRA) corrective actions, environmental restoration (ER) or decontamination and decommissioning (D&D) projects. In addition, this RSOP does not establish a central area or areas for **stockpiling** or storage of regulated asphalt or soil at RFETS, however, it does provide for the use of staging piles for soils exceeding Tier I, in accordance with the ARARs.

To assure compliant and environmentally responsible management of soils and asphalt, the internal soil disturbance review process will continue for all asphalt and soil disturbance activities at RFETS. The Site-approved soil disturbance review program provides an appropriate level of Subject Matter Expert (SME) review, evaluation, and identification of sampling, characterization, health and safety, environmental, or ecological requirements and radiological controls required for each specific asphalt or soil disturbance at RFETS.

In each management and disposition option outlined above, the soil disturbance review process must result in a determination that there is no significant net environmental impact to surface water or ecological resources from the proposed relocation or put-back of the disturbed asphalt or soil. Specific criteria that will be followed in evaluating soil relocation decisions are:

1. Is the excavation and proposed relocation area within or near an IHSS(s), PAC(s), UBC or other area of environmental concern within the same OU as defined in the Historical Release Report (HRR) Site?
2. What is the status and schedule of the HRR Site, i.e., proposed NFA, accepted NFA, near term NFA candidate, scheduled for remediation?
3. After thorough review, are contaminant types and concentrations compatible for a relocation?
4. Is there a potential impact to air or surface water runoff?
5. Is there an impact to ecological resources and erosion controls?
6. Would relocation be cost prohibitive, i.e., how much soil is involved in the relocation?

All asphalt and soil covered by this RSOP will be managed and placed according to the following:

CONTAMINANT CONCENTRATIONS	SOIL	ASPHALT <sup>1</sup>
A. At or below Background or regulatory levels <sup>2</sup> .	Soils may be released in an unrestricted manner.	Asphalt may be released in an unrestricted manner.
B. Below RFCA Tier II subsurface soil action levels for radionuclides and non-radionuclide chemicals.	Soils may be placed anywhere within the same Operable Unit (OU) <sup>3</sup> as long as the area contains a similar chemical and/or isotopic profile, and surface water quality and ecological resources are not impacted.	Asphalt may be placed anywhere within the same OU <sup>3</sup> as long as the area contains a similar chemical and/or isotopic profile, and surface water quality and ecological resources are not impacted
C. Between RFCA Tier I and Tier II subsurface soil action levels for radionuclides and non-radionuclide chemicals.	Soil may be placed: (1) within the excavation site from which it was excavated; (2) into the same Individual Hazard Substance Site (IHSS), Potential Area of Concern (PAC), or Under Building Contamination (UBC) from which it was excavated; (3) into a different IHSS, PAC, or UBC within the same OU that contains soil with similar concentrations of the same type of constituents and surface water quality and ecological resources are not impacted, <sup>4</sup> or (4) placed into a container and actively managed in accordance with the Applicable Relevant or Appropriate Requirements (ARARs).	Asphalt may be placed: (1) within the excavation site from which it was excavated; (2) into the same IHSS, PAC, or UBC from which it was excavated; (3) into a different IHSS, PAC, or UBC within the same OU that contains asphalt or soil with similar concentrations of the same type of constituents and surface water quality and ecological resources are not impacted, <sup>4</sup> or (4) placed into a container and actively managed in accordance with the ARARs.
D. Above RFCA Tier I subsurface soil action levels for radionuclides or non-radionuclide chemicals	Soil may be returned to the excavation or disturbance site from which it originated to be evaluated during future ER activities in accordance with the staging pile ARARs or placed into a container and actively managed.	Asphalt will be placed into a container and actively managed in accordance with the ARARs.

**FOOTNOTES:**

<sup>1</sup> Asphalt may only be used as fill material and may not be placed at the surface.

<sup>2</sup> As identified in the Background Geochemical Characterization Report, EG&G, 1993, RCRA 40 CFR 261 and Toxic Substance Control Act (TSCA) 40 CFR 761.

<sup>3</sup> An OU is defined in RFCA as a grouping of Individual Hazardous Substance Sites (IHSSs) into a single management unit.

<sup>4</sup> Asphalt or soil will not be moved to a different IHSS, PAC, or UBC that has been proposed for No Further Action (NFA). If asphalt or soil is placed into a different IHSS, PAC, or UBC within the same OU that contains asphalt or soil with similar concentrations of the same type of constituents, the IHSS, PAC, or UBC will be evaluated during future ER activities to determine what action is needed, if any.

Asphalt and soil covered by this RSOP are considered remediation waste and may be moved to receiving areas of similar contamination types and concentrations within the same OU without triggering RCRA land disposal restrictions (LDRs). When asphalt or soil are containerized and actively managed for offsite disposition, then the substantive RCRA LDRs are triggered.

The RFCA Parties and Stakeholders are aware that the radionuclide soil action levels are under review and may change in the future. If the radionuclide soil action levels change, this document will be reviewed and modified, as appropriate.

## **DEFINITIONS**

Activity Hazard Analysis. (AHA) An analysis of procedurally controlled activities that uses developed procedures as a guide to address and consider the hazards due to any exposures present during implementation of (activity) procedures, the use and possible misuse of tools and other support equipment required by the procedures. A type of hazard analysis process which breaks down a job or activity into steps, examines each step to determine what hazard(s) exist or might occur, and establishes actions to eliminate or control the hazard.

Buffer Zone. (BZ) means that area of RFETS generally described as the roughly 6000 acres unoccupied by buildings or development that surrounds the Industrial Area at the geographic center of RFETS and extends to its borders.

Comprehensive Environmental Response, Compensation, and Liability Act. (CERCLA) 42 U.S.C. § 9601 *et seq.*, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99-499, and the Community Environmental Response Facilitation Act (CERFA), Pub. L. No. 102-26; and the National Contingency Plan and other implementing regulations.

Colorado Hazardous Waste Act. (CHWA) means sections 25-15-101 *et seq.*, C.R.S. (1982 & Supp.) as amended, and its implementing regulations.

Corrective Action. Means the RCRA/CHWA term for the cleaning up of releases of hazardous waste or hazardous constituents.

Cumulative Impacts Document. (CID) A summary document describing postulated Site accident scenario frequencies, source terms (environmental releases), and Site-wide impacts.

Hazardous Waste. Any solid waste that either exhibits a hazardous characteristic (i.e., corrosivity, ignitability, reactivity, or toxicity) or is named on one of three lists published by EPA in 40 CFR 261, Identification and Listing of Hazardous Waste. To be considered a hazardous, a waste must first meet EPA's definition of "solid waste", which includes liquids.

Historical Release Report. (HRR) means that report required by CERCLA § 103 (c) describing the known, suspected or likely releases of hazardous substances from RFETS.

Individual Hazardous Substance Site. (IHSS) means specific locations where solid wastes, hazardous substances, pollutants, contaminants, hazardous wastes, or hazardous constituents may have been disposed or released to the environment within the Site at any time, irrespective of whether the location was intended for the management of these materials.

Industrial Area. (IA) means that area of RFETS generally described as the roughly 350 acres at the geographic center of RFETS which is occupied by the 400 buildings, other structures, roads and utilities where the bulk of RFETS mission activities occurred between 1951 and 1989.



Low-Level Waste. Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel. At the Site this is radioactive waste less than or equal to 100 nCi of alpha-emitting transuranics per gram of waste matrix or contaminated with uranium.

Low-Level Mixed Waste. Radioactive wastes exhibiting less than or equal to 100 nCi of alpha-emitting transuranics per gram of waste matrix or contains uranium contamination and exhibits a RCRA characteristic or is mixed with or contains a RCRA listed waste, or is derived from the treatment or storage of a RCRA hazardous waste.

No Further Action. (NFA) means the determination that remedial actions (or further remedial actions) are not presently warranted; however, NFA decisions are subject to revisitation at the time of the CAD/ROD in accordance with RFCA Attachment 6, and are subject to paragraph 238 (Reservation of Rights) and to CERCLA § 121 (c) mandate for a five-year review of remedial actions that result in hazardous substances, pollutants, or contaminants remaining at the Site.

Operable Unit. (OU) means a grouping of IHSSs into a single management unit. RFCA has designated two Operable Units at the Site, the Industrial Area and Buffer Zone.

Process Knowledge. Knowledge of the material used in a given operations or activity that provides information for characterization of waste from that process.

Potential Area of Concern. (PAC) An RFETS site of potential release or spill (including IHSSs) designated by the HRR and assigned a unique release number based upon its geographic location, and its status as an existing IHSS.

Resource Conservation and Recovery Act. (RCRA) 42 U.S.C. § 6901 *et. seq.*, as amended by the Hazardous and Solid Waste Amendments of 1984, the Federal Facility Compliance Act of 1992, and implementing regulations.

RFCA Standard Operating Protocol. (RSOP) means approved protocols applicable to a set of routine environmental remediation and/or decommissioning activities regulated under RFCA that DOE may repeat without re-obtaining approval after the initial approval because of the substantially similar nature of the work to be done. Initial approval of an RSOP will be accomplished through an IM/IRA process.

Staging Pile. As defined in 6CCR 1007-3, §264.554, an accumulation of solid non-flowing remediation waste (as defined in 40 CFR § 260.10) that is not a containment building and is used only during remedial operations for temporary storage at a facility.

Stockpile. The temporary short-term storage of asphalt/soil in a managed pile (e.g., covered with tarps) above grade, until analytical results and/or final characterization and disposition is determined.

Under Building Contamination. (UBC) Potential site of release involving soil and/or groundwater beneath an identified building and its foundation. UBC sites are identified within the HRR.

# 1. INTRODUCTION

## 1.1 PURPOSE

As part of Site closure activities, asphalt and soil will be disturbed at the Rocky Flats Environmental Technology Site (RFETS or Rocky Flats) for various reasons, such as investigational drilling; excess sample material; well and borehole sampling and installation; construction and maintenance activities, including cleaning of ditches and culverts, utility line repairs, power pole replacements, etc. To date the management and disposition of asphalt and soil from these activities has been addressed under various regulatory and procedural requirements that are neither consistent nor efficient and often result in unnecessary waste generation. Asphalt and soil disturbed prior to the approval of this document, and awaiting disposition may be evaluated for management and disposition in accordance with the approved RSOP.

The purpose of this RSOP is to streamline in a single decision document a consistent, compliant and environmentally protective approach for managing asphalt and soil at Rocky Flats that requires disturbance prior to final cleanup decisions.

This RSOP does not replace accelerated action decision documents required to perform RCRA corrective actions, ER or D&D projects. In addition, this RSOP does not establish a central area or areas for stockpiling or storage of regulated asphalt or soil at RFETS. Accelerated action decision documents for specific remedial actions impacting asphalt and soil are addressed in separate accelerated action decision document(s), as appropriate. For example, asphalt and soil disturbed during the 903 Pad remediation will be addressed in either the Soil Remediation RSOP or a 903 Pad Interim Measure/Interim Remedial Action, as appropriate.

### **Example of How this RSOP May be Used:**

Scenario: A buried utility line breaks and maintenance is required to repair the break. The break occurred in or near a known IHSS and soil needs to be excavated to allow access to the line. How should the soil be managed?

Under the current process the soil would have to be characterized, managed and dispositioned on a case-by-case basis utilizing analytical data, historical information and process knowledge. If the soil did not exhibit a characteristic of RCRA hazardous waste or contain a RCRA hazardous constituent, it could be placed back in the excavation. Soil not meeting this criteria would be containerized and require active management.

Under this RSOP, a couple of options exist. First, the soil could be placed next to the excavation while existing data is reviewed or sampling is performed. The results would then be compared to the management options hierarchy, described in Section 2.2. Under this scenario, all of the soil could be returned immediately to the initial excavation. Prior to placing the soil elsewhere within the IHSS, PAC, or UBC within the same OU, a review of constituents would be performed to ensure the same constituents and similar concentrations are present.

The advantages of placing the soil back into the excavation under this RSOP is that it prevents the generation of unnecessary contaminated material by introducing clean fill into a contaminated excavation. It also allows for quick backfill of the excavation mitigating health and safety concerns due to an open excavation. And finally, it allows contaminated areas to be addressed during environmental remediation activities, resulting in efficient utilization of resources and a cost-effective approach.

## 1.2 BACKGROUND

The management and disposition of asphalt and soils at RFETS has historically been conducted under various regulatory and procedural requirements. For example:

- The management and disposition of soils generated during Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remediation activities are identified as accelerated actions and covered by project-specific decision documents as dictated by the RFCA. For soils with non-radionuclide chemical contamination, put-back levels are equivalent to a RFCA Tier I Industrial Use Action Level or a RFCA Tier I Open Space Use Action Level [unless some other Action Level Framework (ALF) provision prevents this]. Soils with radionuclide levels below RFCA Tier II levels may be replaced; soils containing radionuclide levels above Tier I may not be replaced. Decisions regarding soils containing radionuclide levels between Tier I and Tier II are determined on a case-by-case basis. [“Replaced” and “put-back” mean returned to the environment.]
- The management and disposition of Investigation Derived Material (IDM) at the RFETS was historically controlled by two standard operating procedures: 4-F99-ENV-OPS-FO.23 (FO.23), *Management of Soil and Sediment Investigation-Derived Materials*, and 4-F46-ENV-OPS-FO.29 (FO.29) *Disposition of Soil and Sediment Investigation-Derived Materials*. IDM consists of environmental media generated during Environmental Investigation Programs. Environmental media are naturally occurring material indigenous to the environment including groundwater, surface water, surface and subsurface soils, rocks, bedrock, and gravel. Examples of commonly occurring IDM include excess sample material, drill cuttings, test pit spoils, and monitoring well purge water. IDM is generated during Site investigational drilling, well and borehole sampling and installation. In accordance with FO.23 and FO.29, the criteria for RCRA hazardous waste determinations for IDM soils constitute a “contained-in” determination as follows:
  1. Does the soil exhibit a characteristic of a RCRA hazardous waste?
  2. Do concentrations of listed constituents exceed residential scenario Programmatic Preliminary Remediation Goals (PPRGs) [ $10^{-6}$  risk]?
  3. Is the Hazard Index (sum of PPRG ratios) for the soil greater than 1?

Only IDM that does not exhibit a characteristic of a RCRA hazardous waste or contain RCRA hazardous waste may be returned to the environment. IDM that contains RCRA

listed waste or exhibits a characteristic of a hazardous waste is managed on-site and dispositioned off-site as RCRA hazardous waste.

- Excavated soils from other sources, e.g., cleaning of ditches and culverts, construction and maintenance activities, and excess soils resulting from utility line repairs and power line pole replacements are not considered IDM; and, are not included within the scope of FO.23 or FO.29. These non-IDM soils are characterized, managed and dispositioned on a case by-case basis utilizing process knowledge, analytical data, and historical information. The non-IDM hazardous waste determinations for soils from these projects are based upon:
  1. Does the soil exhibit a characteristic of a RCRA hazardous waste?
  2. Does the soil contain a RCRA hazardous constituent?

Only soil that does not exhibit a characteristic of a RCRA hazardous waste or contain RCRA hazardous waste may be returned to the environment. Soil that contains RCRA listed waste or exhibits a characteristic of a hazardous waste is managed on-site and dispositioned off-site as RCRA hazardous waste.

- The excavation, management and disposition of asphalt at the RFETS has been controlled on a project specific, case-by-case basis, similar to soils. Asphalt work at the RFETS is primarily due to construction, and maintenance activities. Asphalt is a cementitious material composed of aggregate, binders, and petroleum products, used for road paving, parking lots, equipment pads, and road coatings/sealants. Currently, based upon history, process knowledge, and radiological surveys, asphalt may be dispositioned off-site at appropriate facilities, or recycled for reuse at the RFETS.

### 1.3 PROPOSED ACTION

The proposed action will create a streamlined and consistent approach to temporarily place disturbed asphalt or soil at RFETS prior to final cleanup decisions using a comparison to RFCA subsurface soil action levels. The comparison will be based on available historical information, including previous analytical data and/or process knowledge, or new data (when necessary).

## 2. TECHNICAL APPROACH

This RSOP will be applied in conjunction with the work planning reviews that are normally applicable to any new or modified process or project at RFETS. Project authorization and reviews are initiated through the Integrated Work Control Process (IWCP) and the preparation of an Environmental Checklist and the Soil Disturbance Review Process. Specifically, requirements related to asphalt and soil disturbance such as those having to do with excavation, airborne and waterborne contaminants, and regulated emissions from equipment usage are addressed during the planning phase of the activities within the scope of the RSOP.

## 2.1 SOIL DISTURBANCE REVIEW PROCESS

To assure compliant and environmentally responsible management of soils and asphalt, the internal soil disturbance review process will continue for all asphalt and soil disturbance and excavation activities at the RFETS. For purposes of this RSOP, soil disturbance, is defined as, *“Moving of soil by any means (e.g. shovels, rakes, posts, motorized equipment, etc.). The installation or driving of posts, steel rods, or wooden stakes is also considered disturbing the soil/asphalt with the exception of survey stakes used by land surveying crews.”* Whereas excavation, as defined by 29 CFR Part 1926, Subpart P of the *Occupational Safety and Health Standards for the Construction Industry*, *“means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal”*. The Site-approved soil disturbance review program ensures an appropriate level of SME review and evaluation to assure the necessary levels of sampling/characterization, health and safety, environmental, ecological, and radiological controls are identified for each specific asphalt/soil disturbance.

In addition, in accordance with the site IWCP process, an Environmental Checklist may also be needed. An Environmental Checklist describes the proposed work, and is reviewed by SMEs to ensure that appropriate environmental reviews and controls are considered prior to the beginning of work activities. The review includes RFCA, RCRA, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and TSCA issues, ecological concerns, groundwater, surface water, air quality, pollution prevention, and the National Environmental Policy Act (NEPA). The review provides a written statement to the project that identifies required and suggested environmental compliance actions.

In all cases, the disposition of disturbed or excavated asphalt and soil must be protective of human health and the environment, and is based upon the principle that the asphalt or soil disturbance and placement is to be performed in a manner that causes no significant net environmental impact. An example illustrating this principle can be drawn from a scenario in which soil is to be moved from one contaminated area to another of equal contamination. While such movement is allowed in principle under this RSOP, the receiving site should not be in an area that has significant erosion potential from wind or precipitation, or one with potential to directly impact a surface water conveyance, wetland or wildlife habitat area. [See Section 2.3 for Evaluation Criteria for movement of asphalt and soil]

## 2.2 ASPHALT AND SOIL MANAGEMENT DECISION

For the purposes of this RSOP, RFETS land use assumptions will be as described in RFCA Attachment 5. The specific mechanisms to ensure the implementation and continuity of the necessary institutional controls have not been included in this RSOP. These mechanisms will be identified and implemented through the Final Site Corrective Action Decision/Record of Decision (CAD/ROD).

Asphalt and soil management options are based upon a two-step process: (1) a hazardous constituent analysis and (2) a radionuclide analysis. Each disturbance location will undergo an analysis using available process knowledge, analytical data, and historical information. If sufficient process knowledge or data are unavailable, sampling may be required. When needed, sampling will be conducted in accordance with the IA or BZ Sampling and Analysis Plan, as appropriate. Additionally, in accordance with the Site IWCP process, and Environmental Checklist may be required. It is not the intent of this

RSOP to establish a central area or areas for stockpiling or storage of regulated asphalt or soil at the RFETS. If short-term management of asphalt or soil is necessary while awaiting analytical results the asphalt or soil must be managed with caution, and in accordance with Best Management Practices (e.g., placed onto plastic, and covered). Management options are shown in Figure A, *Asphalt/Soil Management Decision Process*, and described as follows:

(1) Hazardous Constituent Analysis:

- A. If hazardous constituent concentrations are at or below background or regulatory levels (identified in the Background Geochemical Characterization Report, EG&G, 1993, 6 CCR 1007-3, 264, and TSCA 40 CFR 761):
- The soil may be evaluated for release in an unrestricted manner; or
  - The asphalt may be evaluated for release in an unrestricted manner for recycling as fill material, construction of berms, or for off-site management, including recycle, or disposal at a sanitary landfill.

Note: Asphalt disturbances at Rocky Flats will be evaluated based solely upon process and historical knowledge and/or characterization of the surrounding soils related to contamination from a previous spill or release onto or under the asphalt. Due to the nature and composition of asphalt, it is impractical to establish “background” levels for chemical, metal, or radionuclide constituents in the asphalt matrix itself.

- B. If hazardous constituent concentrations are at or below RFCA Tier II levels:
- The soil may be placed anywhere within the same OU as approved through the soil disturbance review process; or
  - The asphalt may be used anywhere within the same OU as approved through the soil disturbance review process as fill material.
- C. If hazardous constituent concentrations are above RFCA Tier II levels, but less than RFCA Tier I levels, the asphalt and soil may be:
- a. Placed within the OU as follows (listed in order of preference):
    - i. Into the excavation site from which it was excavated<sup>□</sup>; (at no time will asphalt or soil containing hazardous constituents exceeding Tier II be placed into an area with lesser contamination); or
    - ii. Into the IHSS, PAC or UBC from which it was excavated<sup>□</sup>; or
    - iii. Into a different IHSS, PAC or UBC within the OU that contains asphalt/soil with similar concentrations of the same type of constituents as approved through the soil disturbance review process<sup>□</sup> (unless this IHSS, PAC or UBC has been proposed as NFA) [See Section 2.3 for Evaluation Criteria for movement of asphalt and soils];

or

□ NOTE: Asphalt will only be used as fill material at these locations.

b. Placed into a container and actively managed in accordance with the ARARs.

D. If hazardous constituent concentrations are greater than or equal to RFCA Tier I levels:

a. The soil may be:

➤ Returned to the excavation or disturbance site from which it originated in accordance with the staging pile ARARs and will be evaluated during future ER activities; or

➤ Placed into a container and actively managed in accordance with the ARARs; or

b. The asphalt will be placed into a container and actively managed in accordance with the ARARs.

After the hazardous constituent concentration analysis is complete, a similar analysis must be completed for radionuclides. For radionuclides, the management options are as follows:

## (2) Radionuclide Constituent Analysis:

A. If radionuclide concentrations are at or below background levels (identified in the Background Geochemical Characterization Report, EG&G, 1993):

- The soil may be evaluated for release in an unrestricted manner; or
- The asphalt may be evaluated for release in an unrestricted manner for recycling as fill material, construction of berms, or for off-site management, including recycle, or disposal at a sanitary landfill.

Note: Asphalt disturbances at Rocky Flats will be evaluated based solely upon process and historical knowledge related to contamination from a previous spill or release onto or under the asphalt. Due to the nature and composition of asphalt, it is impractical to establish “background” levels for chemical, metal, or radionuclide constituents in the asphalt matrix itself.

B. If radionuclide concentrations are at or below RFCA Tier II levels:

- The soil may be placed anywhere within the Site in an area containing a similar isotopic profile; or
- The asphalt may be placed as fill anywhere within the Site in an area containing a similar isotopic profile.



In both cases, the soil disturbance review process must determine that there is no impact to surface water or ecological resources from the proposed movement.

- C. If radionuclide concentrations are above RFCA Tier II levels, but less than RFCA Tier I levels, the asphalt and soil may be:
- a. Placed within the OU (listed in order of preference):
    - i. Into the excavation site from which it was excavated ☐; (at no time will asphalt or soil containing radionuclide constituents exceeding Tier II be placed into an area with lesser contamination); or
    - ii. Into the IHSS, PAC or UBC from which it was excavated ☐; or
    - iii. Into a different IHSS, PAC or UBC within the OU that contains asphalt/soil with similar concentrations of the same type of constituents as approved through the soil disturbance review process ☐ (unless this IHSS, PAC or UBC has been proposed as NFA) [See Section 2.3 for Evaluation Criteria for movement of asphalt and soils]; or
  - ☐ NOTE: Asphalt will only be used as fill material at these locations.
  - b. Placed into a container and actively managed in accordance with the ARARs.
- D. If radionuclide concentrations are equal to or above RFCA Tier I levels:
- a. The soil may be:
    - Returned to the excavation or disturbance site from which it originated in accordance with the staging pile ARARs (only if the soil also contains hazardous constituents above Tier I) and will be evaluated during future ER activities; or
    - Placed into a container and actively managed in accordance with the ARARs; or
  - b. The asphalt will be placed into a container and actively managed in accordance with the ARARs.

In each management and disposition option outlined above, the soil disturbance review process must determine that there is no significant environmental impact to surface water or ecological resources from the proposed replacement or put-back of asphalt or soil.

## **2.3 ASPHALT/SOIL MOVEMENT EVALUATION CRITERIA**

Asphalt and soil covered by this RSOP are considered remediation waste and may be moved to receiving areas of similar contamination types and concentrations within the same OU without triggering RCRA LDRs. Remediation waste means all solid and hazardous wastes, and all media (including groundwater, surface water, soils, and sediments) and debris that contain listed hazardous wastes or that themselves exhibit a hazardous waste characteristic and are managed for implementing cleanup. However, because much of the BZ OU and areas of the IA OU are believed to be uncontaminated, i.e., unimpacted by DOE activities (this will be verified via the characterization process), movement of asphalt and soil above Tier II action levels into uncontaminated areas will not be permitted. Transfers will be limited to areas of similar concentrations with the same type of constituents within the respective OU, as identified in the HRR and updates thereto (or following criteria as described below).

When asphalt and soil from an excavation cannot be returned to the excavation or immediate area, then a site specific soil relocation plan will be required. The soil relocation plan will be based on an evaluation of six criteria and approved on a case by case basis. The following criteria, including groups and responsibilities involved in evaluating the criteria for soil relocation decisions are listed below:

### **Criteria:**

- Is the excavation and proposed relocation area within or near an IHSS(s), PAC(s), UBC or other areas of environmental concern within the same OU as defined in the HRR (HRR Sites)?
- What is the status and schedule of the HRR Site i.e., proposed NFA, accepted NFA, near term NFA candidate, scheduled for remediation?
- After thorough review, are contaminant types and concentrations compatible for a relocation?
- Is there a potential to impact air or surface water runoff?
- Is there an impact to ecological resources and erosion controls?
- Would relocation be cost prohibitive (i.e., how much soil is involved in the relocation)?

### **Groups and Responsibilities:**

- HRR Coordinator – Determine and propose a potential receiving site based upon the assessment of analytical data gathered in performing the Hazardous Constituent Analysis. Specific analytical parameter suites [i.e., volatile organic analysis (VOAs), semi-VOA's, total metals, radionuclides or other potential contaminants of concern (PCOCs)] and concentrations of similar chemical compounds within each parameter suite from the excavation site will be compared to existing analytical data for sites that have been characterized. The proposed receiving site may be an IHSS, PAC, UBC or other area with sufficient analytical data provided that it is not an NFA candidate or accepted as proposed. The HRR coordinator will document (in the appropriate HRR Annual Update) all soil relocation activities where RFCA Tier II action levels are exceeded.
- Environmental Systems & Stewardship (ESS) – Provide independent environmental compliance reviews and approvals for soil disturbance reviews. This review includes issues such as compliance with RFCA, air quality reviews, and ecological reviews.

- Radiological Engineering – Assist the HRR Coordinator and ESS in assessing the radiological data from the excavation site and the proposed soil relocation area. The radiological engineer will also assure that all activities are conducted in accordance with applicable Site radiological procedures and this RSOP.
- Remediation, Industrial D&D, and Site Services (RISS) Surface Water Group – Assures that the proposed relocation area complies with the Stormwater Pollution Prevention Plan and all erosion controls are in place.
- RISS Industrial Safety and Hygiene – Assures the relocation and placement of the asphalt and soil is performed safely, and without impact to Site workers and public health.

When asphalt and soil from an excavation will be containerized and actively managed in accordance with the ARARs for offsite disposition, then the substantive RCRA LDRs are triggered.

## **2.4 SUMMARY**

In some cases, analytical data or generator knowledge may be inadequate or unavailable for the disturbance site. In order to properly characterize the site, additional sampling may be required. In such cases, as directed by the soil disturbance review process, (a) samples may be taken as the excavation or disturbance proceeds, or (b) excavation or disturbance may be delayed until after sampling, and evaluation of analytical data.

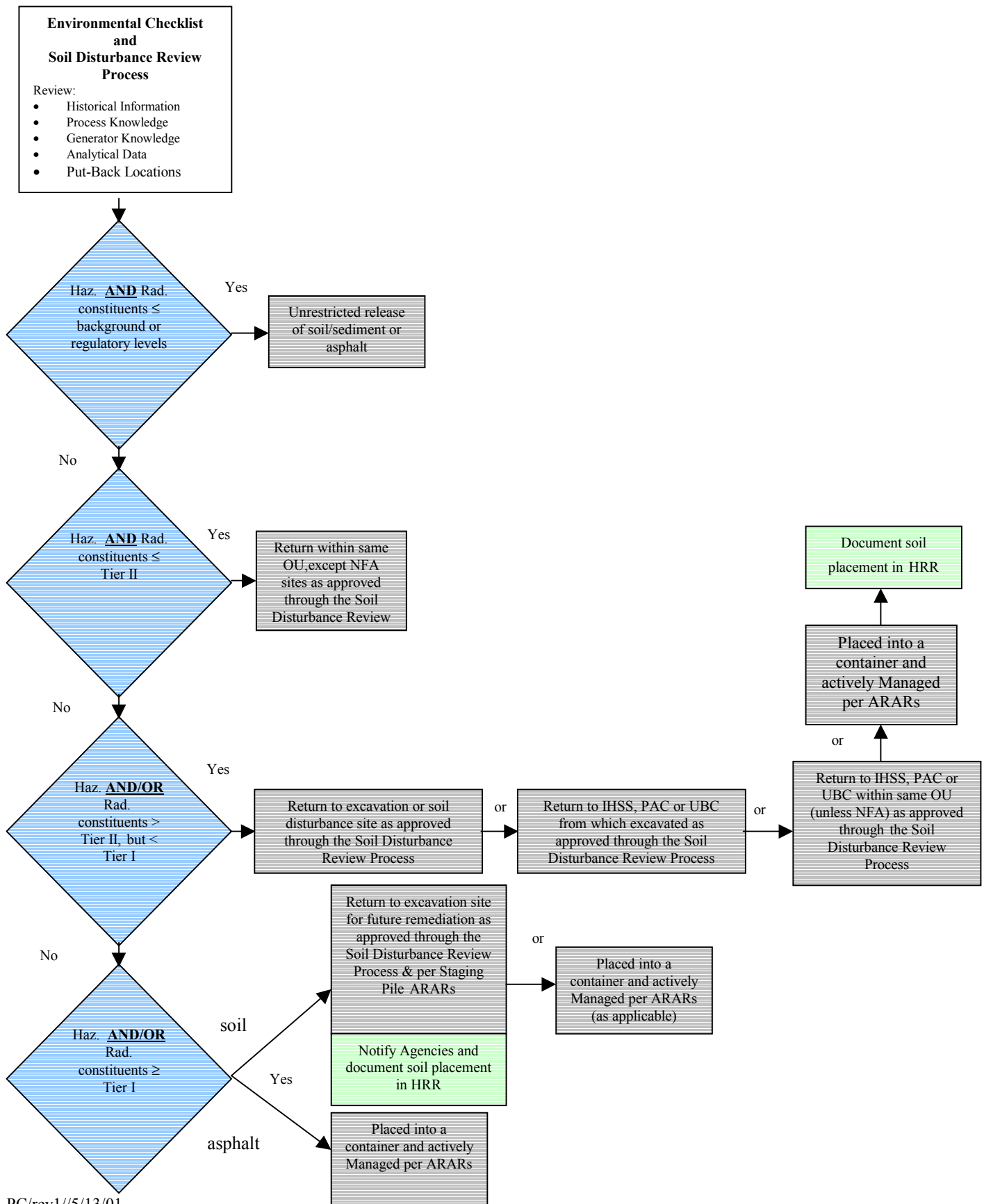
For those management options that allowed for the placement of excavated soils or asphalt within an OU, the storm water pollution prevention provisions of the Site's National Pollutant Discharge Elimination System (NPDES) permit apply. The asphalt and soil materials that are more rigorously managed, including covering, containerizing or storage in appropriate facilities, the management practices of the storage locations prevail. While the NPDES permit Storm Water Pollution Prevention requirements specifically do not apply to materials with radioactive contamination, the storm water monitoring provisions of the permit are incorporated in the RFCA Integrated Monitoring Plan (IMP). Storage practices for radionuclide contaminated materials will prevent radionuclide contamination of storm water. Asphalt contaminated with regulated constituents, and/or radionuclides will not be utilized as fill in or underneath a deep basement, cap or cover. The asphalt may be returned to an excavation as a short-term solution, and be removed and remediated at a future date in accordance with the appropriate ER/D&D schedule.

Some excavations may encounter groundwater or surface water intrusion. If this occurs, the water will be removed, managed and dispositioned in accordance with Site procedures.

Notification of implementation of this RSOP resulting in movement of soil above Tier II will be provided via the HRR during either interim annual updates or the Final Annual Update, transmitted at the end of each fiscal year. When soil with constituents greater than RFCA Tier I are being returned to a site, appropriate steps will be taken to ensure the soil is properly stabilized in accordance with the 2001 Annual Vegetation Management Plan. For these soils, a separate notification to the regulatory agencies

will be made and documented in addition to placing the Soil Disturbance Review documentation in the Administrative Record (AR), and the HRR notification. Regulatory approval of the HRR update constitutes designation of the staging pile. The HRR notification will include the following, in accordance with 6CCR 1007-3, §264.554 (d) (2):

- (i) Length of time the pile will be in operation;
- (ii) Volumes of wastes you intend to store in the pile;
- (iii) Physical and chemical characteristics of the wastes to be stored in the unit;
- (iv) Potential for releases from the unit;
- (v) Hydrogeological and other relevant environmental conditions at the facility that may influence the migration of any potential releases; and
- (vi) Potential for human and environmental exposure to potential releases from the unit.



### 3. WORKER HEALTH AND SAFETY

The primary health and safety concerns pertaining to asphalt and soil disturbances and movement, including drilling and borehole operations, involve manually and mechanically excavating, worker exposure (radiological and chemical), handling, transporting, and placing the backfill. Personal Protective Equipment (PPE), hazards, controls and monitoring requirements will vary depending upon the activity and equipment used. Table 3.1 provides a summary of the principal activities, hazards, controls, PPE, and monitoring. An action-specific Health and Safety Plan (HASP), Activity Hazard Analysis (AHA), and Radiation Work Permit (RWP) will be prepared and implemented on a project-specific basis.

**Table 3.1 – Soil Movement/Placement Health and Safety Summary**

Activity	Hazards	Controls	PPE	Monitoring
Excavation /Drilling	Heavy equipment, crushing, open excavations, underground utilities, cave-in, chemical contamination radionuclides,	Thorough hazard analysis, soil disturbance review, required PPE, adequate training /qualification on heavy equipment, utility location prior to excavation, dust suppression, keep nonessential personnel out of area. Use spotter. Additional controls per HASP, AHA, and RWP.	Safety glasses with side shields, hard hat, leather over the ankle safety toed boots; additional requirements per project-specific HASP, AHA, and RWP, when applicable.	Dust, wind speed, competent person inspections, additional requirements per HASP, AHA, and RWP, as applicable.
Manual Handling of soil/sediment	Back Injury, Cuts and Abrasion, open excavations, underground utilities, cave-in, radionuclides, chemical contamination	Required PPE. Adhere to 50 lb/person lifting restriction, use proper lifting (shoveling) techniques, soil disturbance review, utility location prior to excavation, and use of dust suppression.	Safety glasses with side shields, leather gloves, leather over the ankle safety toed boots, additional requirements per HASP, AHA, and RWP, as applicable.	Dust, wind speed, competent person inspections, additional requirements per HASP, AHA, and RWP, as applicable.
Heavy Equipment Handling of soil and sediment	Open excavations, underground utilities, cave-in, radionuclides, chemical contamination, and roll-over.	Required PPE. Training /qualification on heavy equipment, soil disturbance review, utility location prior to excavation, dust suppression. Additional controls per HASP, AHA, and RWP.	Safety glasses with side shields, hard hat, leather over the ankle safety toed boots additional requirements per HASP, AHA, and RWP, as applicable.	Dust, wind speed, competent person inspections, additional requirements per HASP, AHA, and RWP, as applicable.
Backfill Placement	Heavy equipment, crushing, open excavations, underground utilities, cave-in, radionuclides, chemical contamination	Soil disturbance review, required PPE, adequate training /qualification on heavy equipment, utility location prior to excavation, dust suppression, Keep nonessential personnel out of area. Use spotter. Additional controls per HASP, AHA, and RWP.	Safety glasses with side shields, hard hat, leather over the ankle safety toed boots additional requirements per HASP, AHA, and RWP, as applicable.	Dust, wind speed, competent person inspections, additional requirements per HASP, AHA, and RWP, as applicable.

## **4. WASTE MANAGEMENT**

Soils and asphalt excavated under this RSOP and not replaced within the OU, IHSS, PAC or UBC as previously described, will either be containerized for on-site management in accordance with substantive waste management ARARs identified in Section 6 or packaged and shipped in accordance with regulatory requirements and receiver site Waste Acceptance Criteria (WAC). These materials are considered remediation waste and may be subject to a CERCLA off-site rule determination prior to off-site disposition. Soils and asphalt will be characterized in accordance with regulatory and receiver site WAC requirements.

## **5. ENVIRONMENTAL CONSEQUENCES**

This section describes potential environmental impacts that may be associated with asphalt and soil management at RFETS. The adverse effects are expected to be minimal and temporary. The beneficial impacts of proper asphalt and soil management could be substantial. Beneficial impacts would include the effective reuse of resources, asphalt and soil, the time and labor savings associated with that reuse, and the environmental impacts avoided by not sending soils or asphalt to off-Site locations.

The consequences of asphalt and soil management activities will be minimal for some topics, as discussed in this paragraph. Because the scope of asphalt and soil management does not include the demolition or disposition of Site buildings and facilities, no impact to historic resources will occur. Should historic or archeological resources be found during soil disturbance activities, work will be stopped and Site procedures regarding historic and archeological resources will be followed. Management of asphalt and soil will provide employment for a limited number of people, who will be working under the scope of other work activities. Most workers will be part of the current Site work force, and socioeconomic effects will be minimal. Environmental Justice issues are not relevant to this document; work will occur on-Site and there is little potential to affect the nearest off-Site receptor. Noise generated by equipment (e.g., graders, backhoes) used to manage asphalt and soil will be similar to noise generated by other on-Site activities, and will not be notable.

The activities described in this RSOP support the overall mission to clean up and make the Site safe for future uses. The cumulative effects of this broader, Site-wide effort are also described in the Cumulative Impacts Document (CID). That document describes the short- and long-term effects of the overall Site clean up mission. Remediation of soils and asphalt under this RSOP, including those returned to excavation sites, is scheduled to be completed by Site Closure in 2006. Accordingly, there are no long-term impacts as a result of this soil/asphalt management approach.

To ensure a thorough review of specific actions that will generate soils and asphalt managed under this RSOP, an activity-specific environmental review for each action will be conducted. Review of each action will ensure adequate consideration of environmental concerns.

## **5.1 Soils and Geology**

Surface and subsurface soils have been mixed, compacted, and otherwise disturbed throughout the Site's IA. Ongoing activities will further disturb soils and asphalt throughout the Site. Most activities will occur in developed areas and will affect soils/asphalt that has been previously disturbed.

Some contaminated soils could be affected. Where contaminated soils are disturbed, the soil will remain at the original contaminated location or be placed in a new location that has similar concentrations of the same type of constituents; contaminated soil will not be distributed to undisturbed or "clean" areas. Similarly, contaminated asphalt may be returned to its original contaminated location, or placed in a new location with similar concentrations of the same type of constituents, if less than Tier I. Asphaltic material greater than or equal to Tier I will be containerized and actively managed in accordance with the ARARs.

Because exposed soils, especially soils found on sloped portions of the Site, may be readily eroded, erosion control methods will be used, as necessary. Best management practices, such as the installation of silt fences and the use of tarps or hay bales, will be used at work sites to prevent the transport of sediment. Temporary stockpiles will be limited to areas adjacent to where the soils have been removed; stockpile size will be dictated by excavation requirements. Revegetation may be required to provide erosion control.

The management of soils in areas to be remediated, especially those soils currently underlying paved areas, will have a substantial effect on the final productivity of those soils. The natural soil profile has been eliminated in many areas; for example, soils underlying paved areas have been graded, tilled, compacted, and otherwise altered. These soils may not be productive if the paving is stripped off and the soils are left in an exposed condition. Exposed areas could add to surface water runoff and sediment transport problems. Soils in such areas will be improved (e.g. blended with mulch and fertilizer) in accordance with Site revegetation procedures, as needed. If necessary, additional topsoil will be imported and used, or soils will be amended (e.g., mixed with mulch) and managed based on guidance from Site ecologists. The further disturbance of soil and the stockpiling of soil is not likely to have a notable impact on soil or subsurface geology. Contaminated asphalt will not be stockpiled.

## **5.2 Air Quality**

Work that disturbs asphalt and soil paved areas will generate air pollutants. The potential regulated pollutants include criteria air pollutants (e.g., fugitive dust), hazardous air pollutants, and radiological air emissions. The pollutant most frequently generated, and generated in the greatest amounts, would be fugitive dust, specifically particulate matter less than ten microns in size (PM<sub>10</sub>).

The Colorado Air Quality Control Commission Regulation No. 1 requires that practical, economically reasonable, and technologically feasible work practices are used to control dust emissions. Dust control measures will be evaluated and implemented on a project specific basis. The air quality impact from disturbing soil and paved areas, and the use of heavy equipment would be short-term, and controllable.

A soil disturbance review is issued for activities that disturb soils and asphalt. The review includes a



description of hazardous and radiological constituents in the material. Radiological concerns associated with dust emissions are triggered at an action level of 0.1 millirem per year (mrem/yr) Effective Dose Equivalent (EDE) to the most impacted member of the public. A 0.1 mrem/yr EDE typically warrants regulatory agency notification, and monitoring will be conducted as needed. Measures to control emissions from hazardous or radiological areas will be identified to assure compliance with applicable air quality regulations. These and other measures will be designed to protect the health of workers, the public and the environment. These measures will be identified in a HASP, AHA, and RWP, as applicable.

Adverse air quality impacts will be short-term and will be controlled. An activity-specific environmental checklist will identify the scope of a given work effort—and if the work would disturb soils or asphalt in a relatively large area (e.g., five acres or more), an air conformity determination for PM<sub>10</sub> will be completed. Therefore, potential impacts to workers and the public from proposed soil/asphalt disturbances will be identified and controlled.

### **5.3 Surface Water and Groundwater**

Surface water and groundwater may be affected during and after excavation and other soil disturbances, and storage (e.g., stockpiling) of soils. Wind and water erosion associated with these activities could adversely impact water quality if not properly mitigated. With proper mitigation, impacts will be minimal.

Following excavation and other soil disturbances, the type of fill and soil management practices will influence groundwater infiltration and surface water run-off. For example, groundwater infiltration could increase and surface water run-off will decrease when asphalt is removed and hard packed soils are scarified and revegetated. Rain and snow will exacerbate erosion and the potential effects on surface waters. Prompt revegetation of open areas, and especially sloped areas, will be conducted as needed to reduce impacts to surface water.

Similar to excavated soils, stockpiled soils will be subject to erosion. Stockpiled soils will be managed to control erosion (e.g., covered with tarps). Contaminated soils will be placed back into excavated areas, packed into surface soils, or otherwise prevented from eroding. Contaminated soils may also be placed into containers for off-Site disposal. These management techniques will be used to prevent adverse effects.

### **5.4 Human Health and Safety**

This evaluation of human health impacts addresses activities associated with management of soils and asphalt derived from a variety of activities at RFETS (see Section 1.1). The activities that have generated soils (e.g., drilling, grading) are or will be addressed in other decision documents or in activity-specific reviews. Potential human health impacts resulting from asphalt and soil management activities include fugitive dust, exposure to radioactive or hazardous materials, and on-Site and off-Site traffic.

For the on-Site component of soil management activity, the CID reports the following estimated annual radiological doses from Site closure activities: maximally exposed collocated worker 5.4 mrem;

maximally exposed member of the public 0.23 mrem; population dose 23 person-rem. The population dose would be expected to produce 0.012 latent cancer fatalities in the region of interest population of 2.7 million. Since these estimates include all Site closure activities, impacts from activities addressed in this RSOP will be a small fraction of those reported above.

Environmental impacts due to transportation of Low-Level Waste/Low-Level Mixed Waste (LLW/LLMW) from RFETS closure activities to disposal facilities is addressed in Attachment 3 of the Facilities Disposition RSOP. The analysis includes transportation of all LLW/LLMW generated during Site closure and concluded that:

"... impacts of shipping LLMW and LLW from RFETS to disposal sites on air quality, human health and safety, traffic, and environmental justice would be minimal."

Impacts associated solely with LLW/LLMW asphalt and soil management activities would be a fraction of those addressed in the transportation analysis. To the degree that excavated soils may be replaced on-Site rather than shipped to off-Site disposal locations, activities addressed in this RSOP will reduce impacts from LLW/LLMW transportation.

## **5.5 Ecological Resources**

The proposal to manage asphalt and soil under this RSOP will not directly affect ecological resources, but may have substantial indirect effects. Allowing soils to erode from disturbed areas could have an adverse impact on plants and animals, however, as discussed in Section 5.1 Soils and Geology, erosion control measures will be implemented. Preventing soil erosion will also prevent adverse effects on surface water quality. If soils are remediated to a productive state, and open areas are properly revegetated, the asphalt and soil management activities will be beneficial for native plant and animal species. The benefit would be directly related to size of the affected area and the productivity of the soil. If soils are left exposed for an extended period of time, weed control measures may be necessary. The beneficial impacts of proper erosion controls and remediation, or adverse impacts if soils are not properly managed, will be long-term.

## **5.6 Visual Resources**

Asphalt and soil management activities could result in temporary and minor visual impacts during Site closure. However, the long-term visual impact resulting from asphalt and soil management will be more notable. Because soils will be properly amended and revegetated, paved and other disturbed areas will return to a native grassland appearance. If measures to properly manage soils are not adequately implemented, erosion can lead to long-term and highly visible surface damage.

## **5.7 Transportation**

Although most soils and asphalt will be managed on-Site, some may be disposed of at off-Site locations. On-Site transfers of asphalt and soil at the RFETS could contribute to on-Site traffic. Transportation of RFETS wastes has been analyzed from a NEPA perspective in other documents. There are three areas

(air quality, human health and safety, and traffic) that could be impacted due to the transportation of contaminated soils.

As discussed in Attachment 3 of the Facilities Disposition RSOP, the primary air quality concern is fugitive dust, due to vehicle traffic on paved and unpaved roads. Tailpipe emissions and airborne particulate matter caused by vehicle brakes and tires are also air quality concerns. However, air pollution generated by the anticipated truck traffic is projected to be well below regulatory standards, and would not reach a level of concern. Because of stringent United States Department of Transportation (DOT) packaging and shipping standards, cargo-related accidents would pose a minimal concern to human health and safety. Finally, the low volume of daily truck traffic is not expected to significantly affect road traffic or safety. The cumulative projected impact of shipping contaminated asphalt and soil off-Site, considered with the impacts of other ongoing and reasonably foreseeable future actions, is stated to be minor.

## **5.8 Unavoidable Adverse Effects**

Some temporary, adverse effects may occur because of the soil management activities. Small areas of surface and subsurface soil conditions may change. Minor quantities of pollutants may be released to the atmosphere and surface water. Workers will experience typical health and safety risks that are associated with working with heavy equipment. Noise levels will increase slightly. Traffic and associated effects may be temporarily increased.

## **5.9 Cumulative Impacts**

Activities that disturb, store, or otherwise manage soils and asphalt at RFETS may contribute to environmental effects from other on- and off-Site activities. Dust and other air emissions generated during asphalt and soil management activities, combined with other on- and off-Site activities and construction, may be cumulative.

Eroded soils may reach surface waters, and could combine with other pollutants from on-Site demolition and construction activities. However, erosion from soil disturbances will be controlled.

Soils will be exposed during various activities (e.g., the removal of pavement), and newly exposed soils will need to be properly managed (e.g., scarified and reseeded). This will have the effect of decreasing surface water run-off and increasing groundwater recharge.

Asphalt and soil that is to be sent off-Site for disposal, or transported on-Site for use as backfill or other purposes, will contribute to on- and off-Site traffic. Cumulative impacts associated with transportation could include increased traffic congestion, slower speeds on off-Site roads and highways, and an increased potential for traffic accidents. The cumulative impacts from asphalt and soil management are not anticipated to be notable, and will be temporary. Minor changes that could occur under this RSOP, such as decreased surface water runoff, will be addressed during the environmental restoration of the entire Site.

## 6. COMPLIANCE WITH ARARS

This section contains the substantive ARARs applicable to asphalt and soil management and disposition at the RFETS. The following table outlines the requirement, the citation of the requirement, the type of requirement, and comments associated with the requirement and its relationship to soil management. The letters in the Type column refer to the ARAR classification, and the letters indicate the following: C, chemical-specific ARAR; A, action-specific ARAR; and L, location-specific ARAR.

**Table 6.1 – ARARs**

REQUIREMENT	CITATION	TYPE	COMMENT
<b>SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.]</b> <b>SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § 25-15-101 to -117)]</b>			
<p>The State of Colorado is authorized to administer portions of the hazardous waste management program (e.g., RCRA) to regulate the generation, treatment, storage, and disposal of hazardous waste within Colorado. Although the Colorado hazardous waste management regulations are similar to the federal requirements, both the federal and state regulatory citations are provided for reference purposes and to denote that both federal and state requirements were considered in establishing the identifying the ARAR requirement adopted for the remediation of the RFETS. Only substantive portions of the regulations are required under CERCLA actions for on-site activities.</p>			
HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL	6 CCR 1007-3, 260.10 [40 CFR 260.10]	A	Remediation waste means all solid and hazardous wastes, and all media (including groundwater, surface water, soils, and sediments) and debris that contain listed hazardous wastes or that themselves exhibit a hazardous waste characteristic and are managed for implementing cleanup.
IDENTIFICATION AND LISTING OF HAZARDOUS WASTES	6 CCR 1007-3, 261 [40 CFR 261]	A	
GENERATOR STANDARDS	6 CCR 1007-3 Part 262 (40 CFR Part 262)		
<ul style="list-style-type: none"> <li>Hazardous waste determinations</li> </ul>	.11	A/C	Persons who generate solid wastes are required to determine if the wastes are hazardous according to 6 CCR 1007-3 Parts 261, 267, 279 [40 CFR Parts 261, 266, and 279]
<ul style="list-style-type: none"> <li>Hazardous waste accumulation areas</li> </ul>	.34 (a)(1)(i),(ii),(iv), excluding A & B); (a)(3); (a)(4); (c)(1)	A	Persons who accumulate hazardous waste in containers or tanks must manage the waste in a manner that protects human health and the environment.
PREPAREDNESS AND PREVENTION	6 CCR 1007-3 Part 264, Subpart C [40 CFR 264, Subpart C]		
<ul style="list-style-type: none"> <li>Design and Operation of a Facility</li> </ul>	.31	A/C	Design facilities to minimize the potential for fire, explosion or release of hazardous waste.
<ul style="list-style-type: none"> <li>Required Equipment</li> </ul>	.32	A/C	Facilities must be equipped with specified equipment to mitigate incidents, should they

**Table 6.1 – ARARs**

REQUIREMENT	CITATION	TYPE	COMMENT
<ul style="list-style-type: none"> <li>Testing and Maintenance of Equipment</li> <li>Access to Communications or Alarm System</li> <li>Required Aisle Space</li> <li>Arrangement with Local Authorities</li> </ul>	<p>.33</p> <p>.34</p> <p>.35</p> <p>.37</p>	<p>A/C</p> <p>A/L</p> <p>A</p> <p>A/L</p>	<p>occur.</p> <p>Equipment must be maintained.</p> <p>Employees must have access to emergency communications when managing hazardous waste.</p> <p>Aisle space must be maintained to allow unobstructed access to emergency personnel and emergency equipment.</p> <p>The owner/operator must make arrangements with specified local emergency personnel.</p>
<p>CONTINGENCY PLAN AND EMERGENCY PROCEDURES</p> <ul style="list-style-type: none"> <li>Purpose and Implementation</li> <li>Emergency Coordinator</li> <li>Emergency Procedures</li> </ul>	<p>6 CCR 1007-3 Part 264, Subpart D [40 CFR Part 264, Subpart D]</p> <p>.51 (b)</p> <p>.55</p> <p>.56 (a-i)</p>	<p>A/C</p> <p>A</p> <p>A</p>	<p>RFETS Emergency Response Plan incorporates the substantive requirements of the Contingency Plan in the Site's Part B Hazardous Waste Permit. Emergencies such as fire, explosion, or release of hazardous waste must be mitigated immediately.</p> <p>A designated employee is responsible for coordinating emergency response actions.</p>
<p>MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING</p>	<p>6 CCR 1007-3 Part 264, Subpart E [40 CFR Part 264, Subpart E]</p>	<p>A</p> <p>A</p>	<p>Operating Record</p> <p>Recordkeeping</p>
<p>USE AND MANAGEMENT OF CONTAINERS</p> <ul style="list-style-type: none"> <li>Condition of Containers</li> <li>Compatibility of Waste in Containers</li> <li>Management of Containers</li> <li>Inspections</li> </ul>	<p>6 CCR 1007-3 Part 264, Subpart I [40 CFR Part 264, Subpart I]</p> <p>.171</p> <p>.172</p> <p>.173</p> <p>.174</p>	<p>A</p> <p>A</p> <p>A</p> <p>A</p>	<p>Containers must be maintained in good condition.</p> <p>Wastes must be compatible with containers.</p> <p>Containers must be closed except when adding or removing waste.</p> <p>Containers must be inspected weekly.</p>

**Table 6.1 – ARARs**

REQUIREMENT	CITATION	TYPE	COMMENT
<ul style="list-style-type: none"> <li>Containment</li> <li>System Design and Operation</li> <li>Incompatible Wastes</li> <li>Closure</li> <li>Air Emission Standards</li> </ul>	<p>.175</p> <p>.177</p> <p>.178</p> <p>.179</p>	<p>A</p> <p>A</p> <p>A</p> <p>A/C</p>	<p>Hazardous wastes and residues of hazardous waste must be removed or decontaminated from the unit and soils.</p> <p>Hazardous wastes must be managed in accordance with AA, BB, CC, as appropriate.</p>
<p>CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS</p> <p>Staging Piles</p>	<p>6 CCR 1007-3, Part 264 subpart S [40 CFR Part 264, Subpart S]</p> <p>.554 (d)(1)(i) and (ii)</p> <p>.554(d)(2)(i) – (vi)</p>	<p>A</p> <p>A</p>	<p>The volume of Tier I soil should be wrapped in material that will isolate it from surrounding environmental media or in some other manner that meets the requirements of 264.554(d)(1).</p>
<p>AIR EMISSION STANDARDS FOR TANKS, SURFACE IMPOUNDMENTS, AND CONTAINERS</p> <ul style="list-style-type: none"> <li>Standards: General</li> <li>Waste Determination Procedures</li> <li>Standards: Containers</li> <li>Inspection and Monitoring Requirements</li> </ul>	<p>6 CCR 1007-3 Part 264, Subpart CC [40 CFR Part 264, Subpart CC]</p> <p>.1082</p> <p>.1083</p> <p>.1086</p> <p>.1088</p>	<p>A</p> <p>A</p> <p>A</p> <p>A</p>	<p>Air emission standards must be incorporated into the design of container facilities that store or treat hazardous waste with organic concentrations equal to or greater than 10 ppm (by weight).</p>
<p>LAND DISPOSAL RESTRICTIONS</p> <ul style="list-style-type: none"> <li>Dilution Prohibited as a Substitute for Treatment</li> <li>LDR Determination (Determination if Hazardous Waste Meets the LDR Treatment Standards)</li> </ul>	<p>6 CCR 1007-3 Part 268 [40 CFR Part 268]</p> <p>.3</p> <p>.7</p> <p>.9 (a-c)</p>	<p>A</p> <p>A</p> <p>A</p>	<p>LDR determinations must be completed for hazardous wastes generated.</p> <p>Land disposal restrictions apply primarily to the off-site disposal actions proposed as part of the remedial activity.</p>

### Table 6.1 – ARARs

REQUIREMENT	CITATION	TYPE	COMMENT
<ul style="list-style-type: none"> <li>Special Rules for Wastes that Exhibit a Characteristic</li> <li>Treatment Standards for Hazardous Debris</li> </ul>	.45	A	Alternative Land Disposal restrictions for debris treatment.
<b>TOXIC SUBSTANCES CONTROL ACT (TSCA) [ 15 USC 2601 et seq.] Relating to PCBs</b>			
MARKING REQUIREMENTS	40 CFR 761.40 and .45	A	Labeling of PCBs and PCB storage Areas
DISPOSAL REQUIREMENTS		A	
<ul style="list-style-type: none"> <li>Applicability</li> </ul>	761.50		General PCB Disposal Requirements
<ul style="list-style-type: none"> <li>Disposal Requirements</li> </ul>	761.60		Disposal Requirements
<ul style="list-style-type: none"> <li>PCB Remediation Waste</li> </ul>	761.61		
STORAGE REQUIREMENTS FOR PCBs	40 CFR 761.65	A	
<ul style="list-style-type: none"> <li>Facility Criteria</li> <li>Temporary Storage</li> <li>Inspections</li> <li>Container Specifications</li> <li>PCB radioactive waste</li> <li>Marking</li> </ul>			
<b>CLEAN AIR ACT (CAA) [42 USC 7401 et. Seq.]</b>			
COLORADO AIR QUALITY CONTROL COMMISSION (CAQCC) REGULATIONS	5 CCR 1001 [40 CFR 52, Subpart G]		
<ul style="list-style-type: none"> <li>Fugitive Particulate Emissions <ul style="list-style-type: none"> <li>Construction Activities</li> <li>Storage and Handling of Material</li> <li>Haul Roads</li> <li>Haul Trucks</li> <li>Demolition Activities</li> </ul> </li> </ul>	Section III.D III.D.2(b) III.D.2(c) III.D.2(e) III.D.2(f) III.D.2(h)	A	Every activity shall employ control measures and operating procedures that are technologically feasible and economically reasonable which reduce, prevent, and control fugitive particulate emissions (control plans, use of control equipment, watering, etc.).
<ul style="list-style-type: none"> <li>Air Pollutant Emission Notices (APEN), Construction Permits and Fees, Operating Permits, and Including the Prevention of Significant Deterioration</li> <li>APEN Requirements</li> </ul>	CAQCC Reg. No. 3 [5 CCR 1001-5]  Part A, Section II	C	An APEN shall be filed with the CDPHE prior to construction, modification or alteration of, or allowing emissions of air pollutants from any activity. Certain activities are exempted from APEN requirements per specific exemptions listed in the regulation.
NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS			

**Table 6.1 – ARARs**

REQUIREMENT	CITATION	TYPE	COMMENT
<ul style="list-style-type: none"> <li>National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities</li> <li>- Standard</li> </ul>	<p>40 CFR 61, Subpart H</p> <p>61.92</p>	C, L	<p>This section establishes a radionuclide emission standard equal to those emissions that yield an effective dose equivalent (EDE) of 10 mrem/year to any member of the public. The Site complies by using stack effluent discharge data and empirically estimated fugitive emissions in the dose model CAP88-PC for calculating the EDE to the most impacted member of the public to ensure that it does not exceed 10 mrem/year. Also, the perimeter samplers in the Radioactive Ambient Air Monitoring Program sampler network are utilized to verify compliance with the standard.</p>
<ul style="list-style-type: none"> <li>- Emission Monitoring and Test Procedures</li> </ul>	<p>61.93</p>	C, A	<p>This section establishes emission monitoring and testing protocols required to measure radionuclide emissions and calculate EDEs. This section also requires that radionuclide emissions measurements (stack monitoring) be made at all release points which have a potential to discharge radionuclides into the air which could cause an EDE to the most impacted member of the public in excess of 1% of the standard (0.1 millirem/year).</p>
<ul style="list-style-type: none"> <li>- Compliance and Reporting</li> </ul>	<p>61.96</p>	C, L	<p>This section requires the Site to perform radionuclide air emission assessments of all new and modified sources. For sources that exceed the 0.1 mrem/year EDE threshold (controlled), the appropriate applications for approval must be submitted to the EPA and the CDPHE. Additional substantive requirements may apply if the activity requires approval.</p>
<b>FEDERAL WATER POLLUTION CONTROL ACT (aka Clean Water Act (CWA)) [33 USC 1251 et. Seq.]</b>			
<p>NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM REGULATIONS</p> <ul style="list-style-type: none"> <li>Applicability of Best Management Practices</li> <li>Best Management Practices Programs</li> </ul>	<p>40 CFR 125.102</p> <p>40 CFR 125.104</p>	A	<p>These subparts are applicable to storage and use of products that contain toxic and hazardous pollutants above reportable quantity limitations, at a facility covered by an NPDES permit. In decision documents, identify and protect all connections to the sanitary collection system.</p>



## **7.0 RSOP ADMINISTRATION**

This section contains the information associated with the implementation and documentation of the RSOP and the approval of the RSOP.

### **7.1 Implementation Schedule**

Once the regulatory agencies approve this RSOP, the DOE may implement the RSOP throughout the duration of the Rocky Flats Closure Project. No further formal approvals are required.

Notification of implementation of this RSOP resulting in movement of soil above Tier II will be provided via the HRR during either interim annual updates or the Final Annual Update, transmitted at the end of each fiscal year. Analytical data for soil characterization will be placed into the appropriate Site database.

The DOE will also separately notify the regulatory agencies anytime soils greater than Tier I are placed back at the point of generation for future remediation. In some cases, notification may follow the return of greater than Tier I soils to its point of generation due to delay times associated with receiving analytical results. For these soils, the separate notification to the regulatory agencies and the Soil Disturbance Review documentation will be included in the Administrative Record (AR) and the annual HRR update.

### **7.2 Administrative Record**

This section identifies the documents that constitute the administrative record file for this decision. After completion of the public comment period, all comments received from the public, the responsiveness summary, and the approval letter will be incorporated into the administrative record file. Approval of this decision document is approval by the regulators of the project's administrative record file. The following documents constitute the administrative record file:

- Rocky Flats Cleanup Agreement, July 19, 1996 (As Updated)
- Background Geochemical Characterization Report, EG&G, 1993
- 2001 Annual Vegetation Management Plan for the RFETS
- Draft RSOP submitted for formal public comment
- Responsiveness Summary
- Final RSOP
- RSOP approval letter

### **7.3 Responsiveness Summary**

A responsiveness summary will be prepared to address public comments received and responded to during the formal comment period.